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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,604	01/07/2004	Donald Umstadter	2115D-002758	6068
27572 7590 01/26/2007 HARNESSE, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER RODRIGUEZ, ARMANDO	
			ART UNIT	PAPER NUMBER
			2828	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/26/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/752,604

Applicant(s)

UMSTADTER ET AL.

Examiner

ARMANDO RODRIGUEZ

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 and 37-42 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 46-48, 62, 63 and 68-70 is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-11, 13, 14, 16, 23-25, 28-36, 43, 49-61, 64 and 65 is/are rejected.
- 7) ☒ Claim(s) 8, 12, 15, 26, 27, 44, 45, 66 and 67 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2-17-2004, 5-17-2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the multi-stage acceleration of claim 24 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Election/Restrictions***

Claims 17-22 and 37-42 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 2, 2006.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 13, 23, 49, 62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "reduced" in claims 1 and 49 is a relative term which renders the claim indefinite. The term "reduced" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear within the claim language or the specification, what applicant considers a reduced energy.

The term "narrow" in claims 13, 23 is a relative term which renders the claim indefinite. The term "narrow" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear within the claim language or the specification, what applicant considers a narrow energy range.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 9, 10, 13, 23, 25, 28, 34-36, 43, 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Sprangle et al (US 6,137,811).

Regarding claims 1, 9, 10, 25, 28, 34-36, 43, 50,

Figure 1 illustrates a system for generating electromagnetic radiation including an electron gun (11) for producing free electrons, a wiggler (21) (undulator). Figure 2 illustrates the electron bunches (39).

Regarding claims 13, 23,

Figure 1 illustrates an accelerator (13) for accelerating the electrons.

Claims 1-6, 13, 23, 28-33, 50-58, 61, 64, 65 are rejected under 35 U.S.C. 102(b) as being anticipated by Neil (US 5,541,944).

Regarding claims 1, 13, 23, 28, 50, 64,

Figure 1 illustrates a system generating electromagnetic radiation including a laser (12), a photocathode (14) for generating free electrons and an undulator (24).

Regarding claims 2-6, 29-33, 61,

Figure 1 illustrates an accelerator for accelerating the electrons, which are formed by the laser (12) and the cesium photocathode (14) [applicant's plasma].

Column 6 lines 1-3 describes the electron as a series of bunches.

Regarding claims 16, 24,

Figure 1 illustrates the accelerator (20) including multi-stages (18).

Regarding claims 51-58, 65,

Figure 1 illustrates a cesium photocathode (14) and figure 2 illustrates the undulator (24) including a series of magnets.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1- 7, 11, 13, 14, 50, 59, 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoen (US 6,333,966) in view of Neil (US 5,541,944) and Scharlemann (US 4,727,551).

Regarding claims 1-6 13, 50

Schoen illustrates in figure 1 a system for generating electromagnetic radiation including a pulsed laser (10), a gas jet (30) for generating electrons, an electron accelerator and quadrupole focusing magnets (36) [applicant's undulator].

Schoen is silent as to the electrons bunches.

However, it is well known characteristic for the electrons to bunch, as illustrated in figure 2 and described in column 6 lines 1-3 of Neil.

Schoen is silent as to the quadrupole focusing magnets being an undulator (wiggler).

However, it is well known in the art for quadrupole magnets to form a wiggler (undulator).

Regarding claim 7,

Schoen illustrates in figure 1 a system for generating electromagnetic radiation including a pulsed laser (10).

Regarding claim 11,

Schoen does disclose in column 5 lines 49-57 selection of electron energies desired, which implies filtering.

Regarding claim 14,

Schoen illustrates in figure 1 a system for generating electromagnetic radiation including a pulsed laser (10) [applicant's optical injection, a gas jet (30) [applicant's plasma] for generating electrons.

Regarding claims 59, 60,

Schoen does disclose in column 5 lines 49-57 selection of electron energies desired, which implies filtering. Figure 1 illustrates the filtering occurring after the quadrupole focusing magnets (36) [applicant's undulator].

Schoen does not disclose the filter between the free electron source and the undulator.

However, in accordance with MPEP 2144.04 VI C Rearrangement of Parts positioning the filter between the between the free electron source and the undulator is considered an obvious matter of design choice because the positioning of the filter would not modify the operation of the device.

***Allowable Subject Matter***

Claims 8, 12, 15, 26, 27, 44, 45, 66, 67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 49 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The following is an examiner's statement of reasons for allowance:

Regarding claims 46, 47, 48,

None of the searched prior arts alone or in combination discloses the claimed method steps of independent claims 46, 47 in particular the step of generating seed radiation.

Regarding claim 62,

None of the searched prior arts alone or in combination discloses the claimed method of independent claim 62 in particular the respective undualtors, which implies multiple undualtors.

Regarding claim 63



None of the searched prior arts alone or in combination discloses the claimed method of independent claim 63 in particular undulating separate groups of free electrons, which causes emission of various wavelengths.

Regarding claims 68-70,

None of the searched prior arts alone or in combination discloses the claimed structural combination of independent claim 68 in particular having a source of seed radiation.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2828

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
ARMANDO RODRIGUEZ  
Primary Examiner  
Art Unit 2828

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